Tetra Tech EM Inc.

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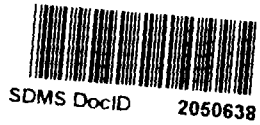

May 21, 2003

Mr. Mitch Cron (3HS22)
Work Assignment Manager
U.S. Environmental Protection Agency Region 3
1650 Arch Street
Philadelphia, PA 19103

Subject: **Trip Report for the Bally Groundwater Contamination Site**
Contract No. 68-S3-00-02
Technical Direction Document No. SE3-03-02-003
Document Tracking No. 1966

Dear Mr. Cron:

Tetra Tech EM Inc. (Tetra Tech) is submitting the final trip report for the Bally Groundwater Contamination site summarizing the sampling activities conducted in February 2003. If you have any questions regarding this report, please contact me at (610) 364-2140.

Sincerely,

Jeanne Thompson
Site Lead

Enclosure

cc: TDD File

TRIP REPORT
FOR THE EXTENT OF CONTAMINATION SAMPLING AT THE BALLY GROUNDWATER SITE BALLY, BERKS COUNTY, PENNSYLVANIA

Prepared for

U.S. Environmental Protection Agency
1650 Arch Street
Philadelphia, PA 19103

Prepared by

Tetra Tech EM Inc.
709 Chelsea Parkway
Boothwyn, PA 19061

EPA Contract No. 68-S3-00-02

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May 21, 2003

Prepared by

Jeanne Thompson
Project Manager

Approved by

William A. Hagel
START Program Manager

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1.0 INTRODUCTION

Under Eastern Area Superfund Technical Assessment and Response Team (START) Contract No. 68-S3-00-02, Technical Direction Document (TDD) No. SE3-03-02-003, U.S. Environmental Protection Agency (EPA) Region 3 Work Assignment Manager (WAM) Mitch Cron tasked Tetra Tech EM Inc. (Tetra Tech) to conduct a groundwater split sampling event at the Bally Groundwater Contamination site in Bally, Berks County, Pennsylvania. Tetra Tech conducted groundwater sampling and analysis to determine the concentration of 1,4-dioxane in groundwater at four stages in a pump and treat system for municipal well #3, in five monitoring wells down gradient from municipal well #3, in four private wells, and in municipal well #2.

This trip report provides site background information in Section 2.0, describes sampling activities in Section 3.0, summarizes analytical results in Section 4.0, evaluates sample analytical data in Section 5.0, and discusses conclusions and recommendations for future actions at the site in Section 6.0. All references cited in this report are listed after the text.

Copies of the field logbook and photographic documentation of the February 2003 sampling event are provided in Appendix A and B, respectively. Copies of the validated analytical reports provided by the Region 3 Environmental Services Assistance Team (ESAT) and the Office of Analytical Services and Quality Assurance (OASQA) for the 16 groundwater samples analyzed for 1,4-dioxane are included as an attachment to the report.

2.0 SITE BACKGROUND

This section describes the site location, presents a site description, and summarizes previous site activities and investigations at the Bally Groundwater Contamination site.

2.1 SITE LOCATION

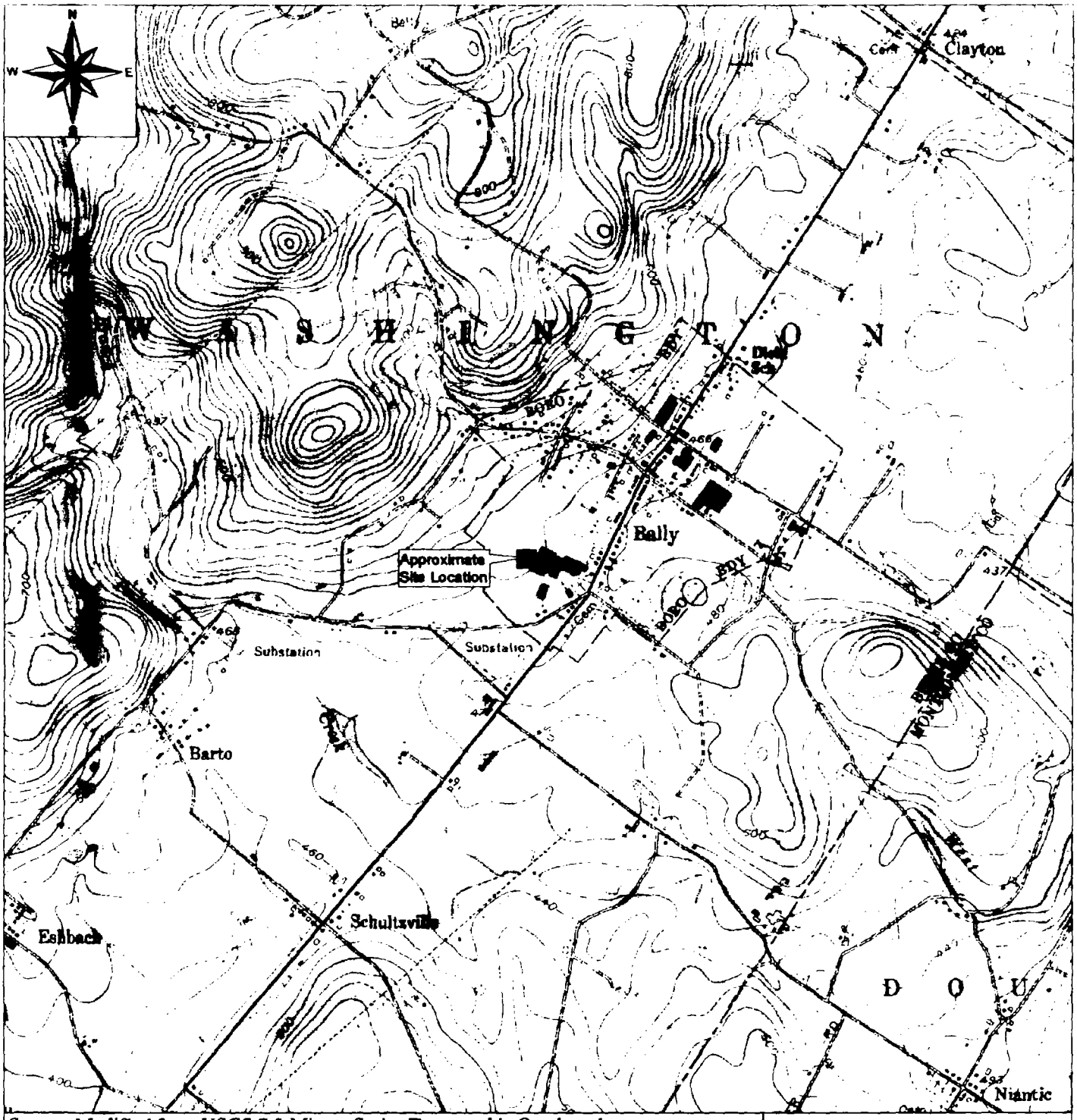
The Bally Groundwater Contamination site is located in the Borough of Bally, Berks County, Pennsylvania (Figure 1). The geographic coordinates of the site are 40.39840° north latitude and 75.59330° west longitude. The Bally Groundwater Contamination site is bordered to the north by wetlands, to the east by residences, to the south by a manufacturing plant, and to the west by residences.

2.2 SITE DESCRIPTION

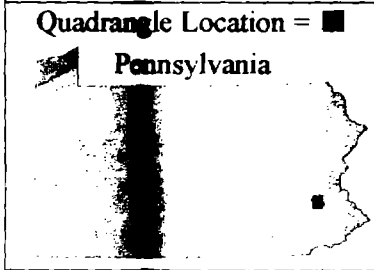
The Bally Groundwater Contamination site consists of an area of groundwater contamination in and around the Bally Engineered Structures (BES) plant in the Borough of Bally, Berks County, Pennsylvania. Approximately 6,400 people live within a 3-mile radius of the BES plant. The closest residence is within 0.125 mile of the plant. The well field on site is the primary source of drinking water for about 1,100 residents in the Borough. Currently, water is being pumped and treated by an air stripping system to remove contaminants before being discharged to the municipal water supply system and into the Perkiomen Creek (EPA 2003c).

2.3 PREVIOUS SITE ACTIVITIES AND INVESTIGATIONS

The site was previously occupied by the BES plant that produced urethane-insulated panels for refrigeration units. The plant's facility included a drum storage area that contained empty drums, waste oil, and spent degreasing solvents. The degreasing solvents contained compounds such as methylene chloride, 1,1,1-trichloroethane (TCA), methanol, toluene, tetrachloroethene (PCE), and trichloroethene (TCE). Wastes generated from the manufacturing process were disposed of in several lagoons on site from approximately 1960 to 1965. The lagoons were backfilled in 1966 and the area was used as a parking lot (EPA 2003b). The site was proposed for the National Priorities List (NPL) in June 1986, and it was formally added on July 22, 1987 (EPA 2003c). BES sold the site to Sunbeam Corporation, who is the current potentially responsible



Source: Modified from USGS 7.5-Minute Series Topographic Quadrangle, East Greenville, Pennsylvania, 1956, Photorevised 1969, 1973, Photoinspected 1980



Bally Groundwater Contamination Site
Bally, Berks County, Pennsylvania

Figure 1
Site Location Map

TDD No. SE3-03-02-003
EPA Contract No. 68-S3-00-02

Tetra Tech EM Inc.

party (PRP) for the site. In 1982, tests conducted by the Borough of Bally and the Pennsylvania Department of Environmental Resources (PADER) detected 1,1,1-trichloroethane at concentrations up to 3,000 parts per billion (ppb) in the Bally Municipal Authority (BMA) well #3. A state water quality check conducted in 1982 identified the BES facility as a source of volatile organic compound (VOC) contamination for the Bally municipal wells; the well was then taken out of service in December of that same year. Although the well was out of service and was not being used to provide water to residents, BMA well #3 was periodically pumped and discharged into a pond to attempt to contain the contamination. Muncipal well #3 was completely shut down in 1987 and re-opened in 1989 after the installation of a treatment system (EPA 2003a).

In 1987, EPA entered into a consent order with BES, the former PRP, for contamination at the site. BES agreed to conduct a study on the type and extent of contamination present at the site and possible cleanup methods. The study was completed in 1989 and in 1991 BES signed a consent decree to design the cleanup plan and conduct all the cleanup activities for the site (EPA 2003a).

In 1991, BES installed a pump and treat system; groundwater from BMA well #3 is pumped into the system from the well and treated by an air stripping system to remove VOCs before it is discharged into Perkiomen Creek or provided to the residents of the Borough of Bally as potable water. EPA conducts regular monitoring of all wells on site (EPA 2003b).

3.0 SAMPLING ACTIVITIES

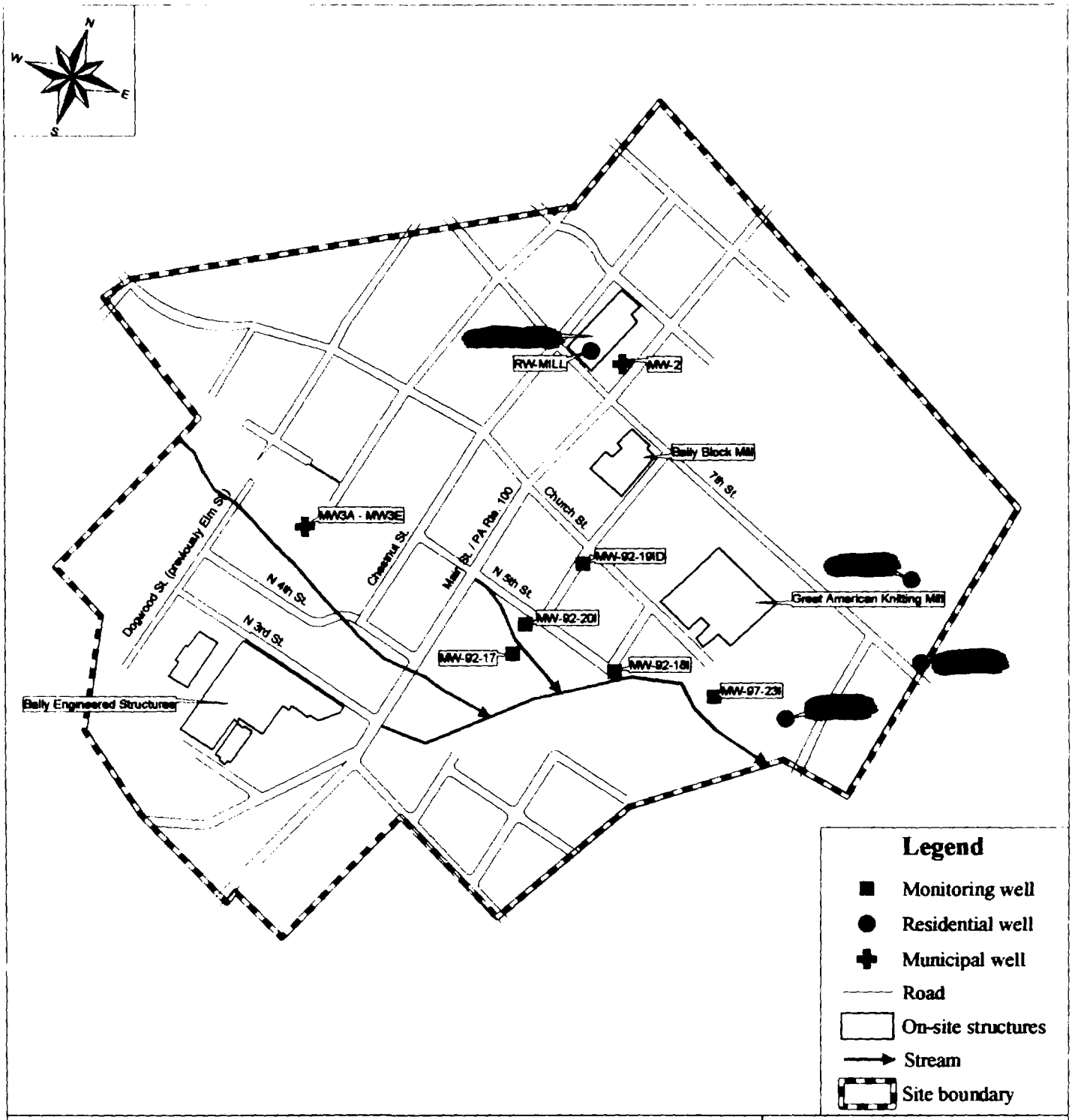
This section summarizes the sampling activities, sample-handling procedures, and deviations from the sampling plan associated with the February 2003 groundwater sampling event. Copies of the field logbook notes and photographic documentation log from the sampling event are included as Appendix A and B, respectively.

3.1 SITE ACTIVITIES

During the February 2003 sampling event at the site, Tetra Tech collected five groundwater samples from municipal well #3, six split samples from five monitoring wells, including a duplicate sample, four split samples from four private wells, and one split sample from municipal well #2 for 1,4-dioxane analysis. Figure 2 shows the site layout and sampling location points.

On February 25, 2003, Tetra Tech collected a total of five groundwater samples, including one duplicate sample (MW3A to MW3E), from four stages of the pump and treat system of municipal well #3. Sample MW3A was collected before the groundwater entered the pump and treat system. Sample MW3B was collected after the groundwater went through the first air stripper. Sample MW3C was collected after the groundwater went through the second air stripper. Sample MW3D was collected after the groundwater passed through the air stripping process and the chlorination process; sample MW3E was a duplicate of MW3D. Prior to sample collection, the water lines were purged for at least 15 minutes and each sample was collected in three unpreserved, 40-milliliter (mL) volatile organic analysis (VOA) vials. The groundwater samples were collected in accordance with EPA Environmental Investigations Standard Operating Procedure (SOP) and Quality Assurance Manual, Section 8, "Sampling of Potable Water Supplies" (EPA 1996).

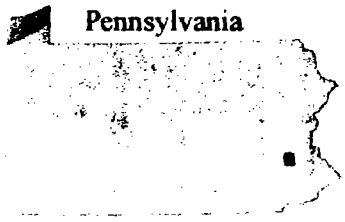
From February 26 through February 28, 2003, Tetra Tech collected 11 split groundwater samples with PRP contractor Civil and Environmental Consultants, Incorporated (CEC). Six samples, including a duplicate sample, were collected from five monitoring wells down gradient from municipal well #3 (MW-92-17, MW-92-18I, MW-92-19I, MW-92-19ID [duplicate], MW-92-20I, and MW-92-23I). One sample was collected from the Borough's municipal well #2 (MW-2). One sample each was collected from private wells at the [redacted]l facility (RW-MILL), the [redacted] (RW-MOSE), the [redacted] residence (RW-GEHR), and the [redacted] residence (RW-EGGE).



Source: Modified from 'Figure 1, Site Layout',
Civil and Environmental Consultants, Inc. 9/30/2002, drawn by 'TLM'.

Not to Scale

Approximate Site Location = ■



Bally Groundwater Contamination Site
Bally, Berks County, Pennsylvania

Figure 2
Site Layout and Sampling Location Map

TDD No. SE3-03-02-003
EPA Contract No. 68-S3-00-02

Tetra Tech EM Inc.

All the split samples were collected by CEC and all equipment necessary to collect the samples was provided by CEC. Monitoring wells MW-92-17, MW-92-18I, MW-92-19I, MW-92-20I, and MW-92-23I were purged using a Grundfos pump. CEC determined the length of time each well was to be purged. Once the wells were purged, each sample was collected in three unpreserved 40-mL VOA vials using a bailer. Purged groundwater was taken off site for disposal by Elk Transportation Company, a subcontractor for CEC. Sampling of the private wells occurred after the water lines were purged for 15 minutes. Each sample was collected in three unpreserved 40-mL VOA vials.

Quality assurance/quality control (QAQC) measures, such as logbook documentation, were applied in accordance with Tetra Tech SOP No. 024, "Recording of Notes in Field Logbook" (Tetra Tech 1999).

3.2 SAMPLE HANDLING PROCEDURES

The groundwater samples collected during the February 2003 sampling event were handled in accordance with Tetra Tech's Quality Assurance Project Plan (QAPP) for START (Tetra Tech 2001) and Tetra Tech's SOP No. 019, "Packaging and Shipping Samples" (Tetra Tech 2000). Groundwater samples collected from municipal well #3 (MW3A through MW3E) were shipped to EPA Region 3 Fort Meade Laboratory in Fort Meade, Maryland. The remaining samples were shipped to EPA Contract Laboratory Program (CLP) laboratory Liberty Analytical Laboratory in Cary, North Carolina.

3.3 DEVIATIONS FROM THE SAMPLING PLAN

During the February 2003 sampling event, Tetra Tech collected one groundwater sample from [redacted] (RW-MILL) and municipal well #2 (MW-2); these samples were not proposed in the sampling and analysis plan (SAP) for this event. The additional samples were taken because two proposed sampling locations, the [redacted] residence and a church on site, could not be sampled. Samples were not collected from the proposed locations because Mr.

[redacted] refused to give access to his property for groundwater sampling and the church had an irreparable pump.

4.0 ANALYTICAL RESULTS

Analytical results from samples MW3A through MW3E, collected from the pump and treat system of municipal well #3, exceeded the EPA risk-based concentration (RBC) of 6 micrograms per liter (µg/L) for 1,4-dioxane. The results ranged from 49.3 µg/L for MW3A (groundwater sample collected prior to treatment) to 52.2 µg/L for MW3B (sample collected after the first air stripper).

Monitoring and private well split samples and municipal well #2 split sample analytical results were below the RBC, except for sample MW-92-23I, which had a concentration of 17 µg/L and the qualifier, "L." Analytical results qualified "L" signifies that the laboratory found the analyte present and the reported value is biased low; the actual value is expected to be higher. Four of the monitoring well sample results were qualified as "L," while the remaining two monitoring well results were qualified as "B." Analytical results qualified "B" signifies that the laboratory did not detect the concentration of the analyte substantially above the level reported in the laboratory or field blanks. Analytical results from the four private wells and municipal well #2 were all qualified as "B."

Table 1 provides a summary of the 1,4-dioxane sample results for the 16 groundwater samples (including two duplicates) collected during the February 2003 sampling event at the Bally Groundwater Contamination site.

TABLE 1

1,4-DIOXANE ANALYTICAL RESULTS

Sample ID	Collection Date	Collection Time	1,4-Dioxane (µg/L)	Sample Qualifier
MW3A	02/25/03	0915	49.3	NA
MW3B	02/25/03	0920	52.2	NA
MW3C	02/25/03	0925	38.7	NA
MW3D	02/25/03	0930	50.5	NA
MW3E (duplicate of MW3D)	02/25/03	0935	50.6	NA
MW-2	02/26/03	1130	0.43	B
MW-92-17	02/26/03	1510	2.4	L
MW-92-18I	02/27/03	1340	2.8	L
MW-92-19I	02/27/03	0815	0.52	B
MW-92-19ID (duplicate of MW-92-19I)	02/27/03	0818	0.71	B
MW-92-20I	02/27/03	0955	2.4	L
MW-92-23I	02/27/03	1510	17	L
RW-[redacted]	02/28/03	0940	0.37	B
RW-[redacted]	02/28/03	0918	1.4	B
RW-[redacted]	02/28/03	0835	1.0	B
RW-[redacted]	02/28/03	0905	0.30	B

Notes:
µg/L = Micrograms per liter
B = Not detected substantially above the level reported in laboratory or field blanks
ID = Identifier
L = Analyte present. Reported value may be biased low. Actual value is expected to be higher
MW = Monitoring well/Municipal well
NA = Not applicable
RW = Private well

CEC provided 1,4-dioxane analytical results for the 11 split samples collected with Tetra Tech. Based on the results provided by CEC, 1,4-dioxane was not present in any of the samples except for MW-92-23I, which had a 1,4-dioxane concentration of 5.7 µg/L (J-qualified), which is below the EPA RBC of 6 µg/L. Sample results qualified with a "J" indicate that the analyte is present, but the reported value may not be accurate or precise. Table 2 summarizes the analytical results for 1,4-dioxane concentrations in samples analyzed by CEC and Tetra Tech.

TABLE 2

COMPARISON OF TETRA TECH AND CEC LABORATORY RESULTS

Tetra Tech Sample ID	CEC Sample ID	Date Collected	1,4-Dioxane Concentration (µg/L)	
			Tetra Tech CLP Result	CEC Laboratory Result
MW-2	WELL #2	02/26/03	0.43 B	ND
MW-92-17	92-17-226-3	02/26/03	2.4 L	ND
MW-92-18I	92-18I	02/27/03	2.8 L	ND
MW-92-19I	92-19I	02/27/03	0.52 B	ND
MW-92-20I	92-20I	02/27/03	2.4 L	ND
MW-92-23I	92-23I	02/27/03	17 L	5.7 J
RW-[redacted]	EGGERLING	02/28/03	0.37 B	ND
RW-[redacted]	GEHRINGER	02/28/03	1.4 B	ND
RW-[redacted]	BALLY RIBBON	02/28/03	1.0 B	ND
RW-[redacted]	MOSER	02/28/03	0.30 B	ND

Notes:
µg/L = Micrograms per liter
B = Not detected substantially above the level reported in laboratory or field blanks
CEC = Civil and Environmental Consultants, Incorporated
J = Analyte present. Reported value may not be accurate or precise.
L = Analyte present. Reported value may be biased low. Actual value is expected to be higher
MW = Monitoring well/Municipal well
ND = Not detected
RW = Private well

5.0 DATA EVALUATION

The samples collected during this sampling event are being handled and evaluated as drinking water samples because of 1,4-dioxane contamination at the site and its proximity to the Bally Borough public water supply system. Tetra Tech's split sample analytical results were compared to CEC's sample analytical results from the five monitoring wells, four private wells, and municipal well #2. Analytical results obtained for samples collected from this sampling event have been compared to EPA's Region 3 drinking water RBC for the carcinogen 1,4-dioxane (6 µg/L). RBCs for a specific substance correspond to an excess lifetime cancer risk of 1.0×10^{-6} for carcinogens, or, in the case of noncarcinogens, a target hazard quotient of 0.1. Substances present at levels above corresponding RBCs are considered contaminants of potential concern and may warrant further evaluation to determine whether they pose long-term risks under a given land use or exposure scenario.

Tetra Tech's 11 split samples were analyzed for 1,4-dioxane following EPA Method SW 846 8260 with Selective Ion Monitoring (SIM) and a detection limit of 1 µg/L. CEC's samples were analyzed using EPA Method SW 846 8270C with a detection limit of 10 µg/L. Because two different methods with varying detection limits were used to analyze samples for 1,4-dioxane, Tetra Tech's analytical results cannot be compared to CEC's, except for sample MW-92-23I, which had a concentration of 1,4-dioxane above 10 µg/L (CEC's laboratory's detection limit). Tetra Tech's analytical results for sample MW-92-23I showed a 1,4-dioxane concentration of 17 µg/L (above the EPA RBC of 6 µg/L), while CEC's analytical results for the same sample had a concentration of 5.7 µg/L. Based on the fact that a detection limit of 1 µg/L was achieved, Tetra Tech's analytical results are assumed to be more accurate than CEC's. Samples collected from the remaining monitoring wells, the four private wells, and municipal well #2 were all below the RBC for 1,4-dioxane.

Analytical results obtained from the samples collected from municipal well #3 revealed 1,4-dioxane concentrations exceeding the RBC, with the highest concentration being 52.2 µg/L in sample MW3B (after water passes through the first air stripper of the pump and treat system).

Sample MW3D, collected downstream of the chlorination system, had a concentration of 50.5 µg/L, and the duplicate sample, MW3E, had a concentration of 50.6 µg/L. Based on these results, 1,4-dioxane does not appear to be removed from groundwater by municipal well #3's pump and treat system.

6.0 CONCLUSIONS AND RECOMMENDATIONS

The objective of this assessment was to determine the concentration of 1,4-dioxane in the four stages of the municipal well #3 pump and treat system, five monitoring wells down gradient from municipal well #3, four private wells, and municipal well #2 at the Bally Groundwater Contamination site. Municipal well #3 provides water to about 1,100 residents in the Borough of Bally. Laboratory analytical results obtained for samples collected from the treatment system of municipal well #3 indicate 1,4-dioxane concentrations at almost 10 times the EPA RBC. Based on this information, Tetra Tech has determined that the pump and treat system is ineffective at removing 1,4-dioxane from the groundwater and recommends additional treatment.

In addition, sample MW-92-231 indicates a 1,4-dioxane concentration almost three times the EPA RBC. Because of this, Tetra Tech recommends that split samples be collected quarterly from the five monitoring wells, the four private wells, and municipal well #2 to continue monitoring 1,4-dioxane concentrations at the Bally Groundwater Contamination site. Quarterly split sampling will also allow EPA to confirm the sampling procedures used by the PRP's environmental contractor and to compare the contractor's laboratory analytical results with EPA's laboratory analytical results. Also, Tetra Tech recommends that the PRP's contractor use an EPA-approved method with a detection limit below the RBC, such as method SW846 8260 with SIM.

REFERENCES

Civil and Environmental Consultants, Incorporated (CEC). 2002. Figure 1, Site Layout Map. Drawn by Tom L. Maher. September.

Tetra Tech EM Inc (Tetra Tech). 1999. "Recording of Notes in Field Logbook." SOP No. 024. November.

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APPENDIX A

FIELD LOGBOOK DOCUMENTATION

(Five Pages)

Location _____ Date _____

Project / Client BALLY GROUNDWATER

TUESDAY FEBRUARY 25, 2003

0815 START ARRIVES AT BOROUGH HALL IN BALLY

0900 START MEETS WITH JOE THE REPRESENTATIVE OF BOROUGH BALLY.

START & JOE ARRIVES AT PUMP AND TREAT SYSTEM. BEGIN PURGING LINES.

START WILL COLLECT SAMPLES

MW3A - 0915

MW3B - 0920

MW3C - 0925

MW3D - 0930

MW3E - 0935

1000 - START LEAVES PUMP AND TREAT SYSTEM AREA AND RETURNS TO BOROUGH HALL.

LATE NOTE: START PREPARES TRIP BLANK-D AT 0900 AND FIELD BLANK AT 0900.

1200 START ARRIVES AT OFFICE. WILL SHIP COOLER FROM FEDEX OFFICE LOCATED ON BLUEBALL ROAD AT 1300 HOURS.

NOTES: LINES WERE PURGED FOR 15MIN BEFORE COLLECTION

MW3A - COLLECTED BEFORE WATER ENTERED ANY PART OF PUMP & TREAT SYSTEM (WELL SAMPLE)

Location _____ Date _____

Project / Client BARLY GROUNDWATER

TUESDAY FEBRUARY 25, 2003

MW3B- SAMPLE COLLECTED AFTER WATER PASSED THROUGH FIRST AIR STRIPPER.

MW3C- SAMPLE COLLECTED AFTER WATER PASSED THROUGH SECOND AIR STRIPPER

MW3D- SAMPLE COLLECTED AFTER AIR STRIPPING PROCESS AND CHLORINATION PROCESS. COLLECTED SAMPLE FROM FAUCET ON SIDE BUILDING THAT HOUSES PUMP AND TREAT SYSTEM (MS/MSD)

MW3E- DUPLICATE OF MW3D.

• ALL SAMPLES COLLECTED IN UN PRESERVED VOA VIALS.

1300 START DROPPED SAMPLES AT FEDEX.

7 SAMPLES WERE SHIPPED TO FORT WORTH INCLUDING A FIELD AND TRIP BLANKS.

AR300075

Location _____ Date _____

Project / Client BARLY GROUNDWATER

WEDNESDAY FEBRUARY 26, 2003

0715 START ONSITE. MET WITH WALT FROM CEC AT FIRST WELL (92-17). WELL IS ABOUT 440' DEEP AND 6" WIDE.

1000 CONTINUE TO PURGE WELL 92-17.

1130 START COLLECTS SAMPLE FROM MUNICIPAL WELL #2. START SPOKE WITH MITCH CROW OF EPA WHO GAVE PERMISSION TO START TO COLLECT THE SAMPLE.

1200 WALT FROM CEC ESTIMATES PURGING OF WELL TO END AT 1500 HOURS.

LATE NOTE: PURGED WATER IS BEING HOSED TO A TRACTOR TRAILER FROM ELK TRANSPORTATION INC. THE WATER WILL BE TRANSPORTED TO NEW JERSEY.

1400 WELL 92-17 CONTINUES TO BE PURGED AND WATER DIRECTED TO PARKED TRACTOR TRAILERS.

• A GRUNDFOS PUMP IS BEING USED TO PURGE MONITORING WELL # 92-17 •

• DEPTH TO GROUNDWATER 5.5 FEET •

1500 CEC ENDED PURGING OF WELL.

1510 START COLLECTS SAMPLE MW-92-17.

1900 START DROP 3 SAMPLES AT FEDEX AT AIRPORT.

Location _____ Date _____

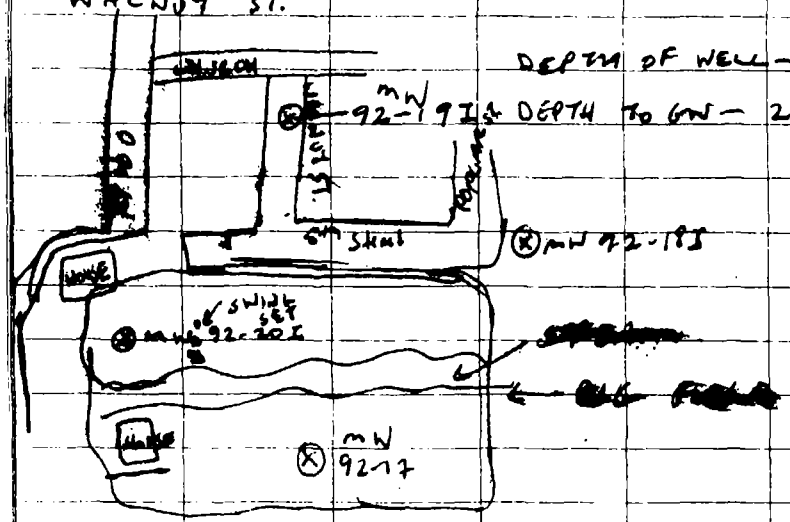
Project / Client BALLY GROUNDWATER

THURSDAY FEBRUARY 27, 2003

0715 START ONSITE.

0730 CEC REPRESENTATIVE WALT AND TANKER TRUCK ARRIVES ON SITE.

0740 - BEGIN PURGING MW 92-19I LOCATED ON WALNUT ST.



- WALT ESTIMATES PURGING FOR 25 MIN.

0800 - START PREPARES TRIP BLANK.

0815 - START COLLECTS MW 92-19I AND MW 92-19ID (DUPLICATE OF MW92-19I) SAMPLES WERE COLLECTED USING A BAILER.

0840 START AND CEC ARRIVE AT WELL #92-20I

DEPTH TO WATER - 8.03'

LATE NOTE: PUMP FOR MW 92-19I WAS RAN AT A SPEED CORRESPONDING TO 379.9 HERTZ (Hz).

0910 START TAKES 3 PHOTOS.

AR300176

Location _____ Date _____

Project / Client BALLY GROUNDWATER

THURSDAY FEBRUARY 27, 2003

CEC BEGINS PURGING WELL 92-20I. GRUNDFOS PUMP SET AT 371.8 Hz. CEC WILL PURGE THE WELL FOR 30 MINUTES.

0955 START COLLECTS SAMPLE FROM MW 92-20I. SAMPLE WAS COLLECTED USING A BAILER.

NOTE: ALL PURGED WATER IS BEING COLLECTED IN TRACTOR TRAILER FROM ELK TRANSPORTATION.

1030 CEC'S GRUNDFOS PUMP BROKE. WALT WALTERS LEFT TO GO TO ALLENTOWN TO BUY A NEW ONE.

1300 CEC BACK ONSITE. BEGIN SETUP TO PURGE WELL 92-18I. PUMP AT 400 Hz.

SAT WELL DEPTH TO WATER - 0.83'

1310 CEC BEGINS PURGE. WELL BE PURGED FOR ABOUT 25 MINUTES.

1340 START COLLECTED SAMPLE MW 92-18I SAMPLE WAS COLLECTED WITH BAILER.

1420 START ARRIVES AT WELL 92-23I

DEPTH TO WATER - 2.05'

1430 CEC BEGINS PURGE ON WELL. WILL TAKE ABOUT 30 MINUTES. WELL LOCATED AT THE END OF CHURCH STREET IN A FIELD.

Location _____ Date _____

Project / Client BALLY GROUNDWATER

THURSDAY FEBRUARY 27, 2003

- GRUNDFOS PUMP SET AT 400 Hz.

1510 START COLLECTS SAMPLE FROM WELL 92-231, USING A BAILER.

1645 START ARRIVES AT BOOTHWYN OFFICE. PRINTS TAGS AND LABELS FOR SAMPLES.

1830 START DROPS SAMPLES AT FEDEX FOR SHIPMENT TO LAB.

NOTE: EMAILED WITH GREEN INFORMATION ON HOW SAMPLES WERE LABELED I.E. SAMPLE IDENTIFIERS AND THEIR CORRESPONDING WELLS.

jeanne Thompson

AR300077

Location _____ Date _____

Project / Client BALLY GROUNDWATER

FRIDAY FEBRUARY 28, 2003

0730 START ARRIVES ONSITE. PREPARES TRIP BLANK, TB-04.

0750 CEC WALT ONSITE AT BALLY BOROUGH BUILDING. INFORMS START THAT THE CHURCH AND THE BAUMAN RESIDENCE WILL NOT BE SAMPLED. THE CHURCH CURRENTLY HAS A BROKEN PUMP AND MR. BAUMAN DOES NOT WANT HIS WELL SAMPLED.

INSTEAD CEC WILL SAMPLE WELL LOCATED AT BALLY RIBBON MILL.

START TO SAMPLE 4 WELLS: BALLY RIBBON MILLS, MOSER, GEHRINGER AND EGGERLING RESIDENCES.

0815 START ON WAY TO BALLY RIBBON MILL TO MEET WITH DONNY CONRAD WHO IS IN CHARGE OF WATER TREATMENT PLANT LOCATED AT 23 N. 7TH STREET.

0835 START COLLECTS SAMPLE RM-MILL

0845 START ARRIVES AT MOSER RESIDENCE, LOCATED AT SOUTH 5TH STREET (FARM)

0905 - SAMPLE RM-MOSE COLLECTED

0910 - ARRIVE AT GEHRINGER FARM ON

Location _____ Date _____

Project / Client BALLY GROUNDWATER

FRIDAY FEBRUARY 28, 2003

0925 START COLLECTS RW-GGHR

0925 START ARRIVES AT ~~EGGE~~ (JRT) THE FORMER RESIDENCE OF [redacted] LOCATED AT [redacted].

0940 START COLLECTS RW-EGGE.

FACILITY LOCATED HERE IS NOW A PRINT FACTORY. ([redacted] RESIDENCE

1200 START RETURNS TO BOOTHWYN OFFICE AND BEGINS PREPARING SAMPLES FOR SHIPMENT TO LIBERTY ANALYTICAL LABS ~~WITH~~ (JRT) SATURDAY DELIVERY.

Jeanne Thorpe

AR300078

Location _____ Date _____

Project / Client _____

APPENDIX B

PHOTOGRAPHIC DOCUMENTATION LOG

(Two Pages)

Photographic Documentation

Client: U.S. Environmental Protection Agency, Region 3
Site Name: Bally Groundwater Contamination site
Location: Bally, Pennsylvania

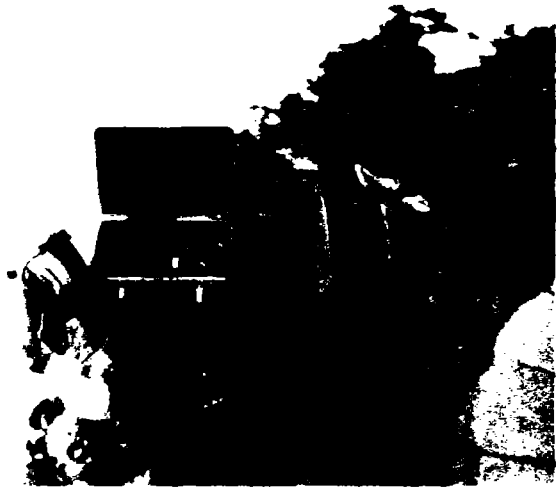
Prepared by: Tetra Tech EM Inc.
Photographer: Jeanne Thompson
TDD No: SE3-03-02-003
Contract No: 68-S3-00-02

Photograph No. 01

Photograph Date:
February 26, 2003

Orientation: Down

Description: Grundfos pump control box set up used during the purging of monitoring wells.



Photograph No. 02

Photograph Date:
February 26, 2003

Orientation: Southeast

Description: Grundfos pump attached to a hose ready to be lowered into the monitoring well to be purged.

Photographic Documentation

Client: U.S. Environmental Protection Agency, Region 3
Site Name: Bally Groundwater Contamination site
Location: Bally, Pennsylvania

Prepared by: Tetra Tech EM Inc.
Photographer: Jeanne Thompson
TDD No: SE3-03-02-003
Contract No: 68-S3-00-02

Photograph No. 03

Photograph Date:
February 26, 2003

Orientation: West

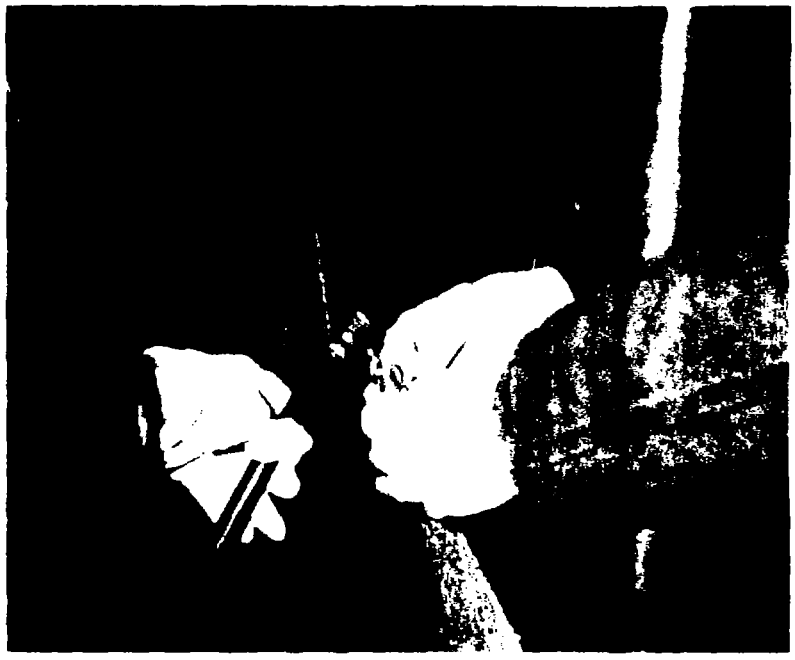
Description: Monitoring well sample being collected using a bailer to pour the groundwater into a 40-milliliter VOA vial.

Photograph No. 04

Photograph Date:
February 28, 2003

Orientation: Down

Description: Sample being collected from private well into a 40-milliliter VOA vial.



ATTACHMENT

OFFICE OF ANALYTICAL SERVICES AND QUALITY ASSURANCE VALIDATED DATA

(28 Pages)

U.S. EPA REGION III
Office of Analytical Services and Quality Assurance
Fort Meade, Maryland

OASQA LABORATORY REPORT

BALLY GW CONTAMINATION

Lab Request #: REQ03099
Request Form #: DAS R31553

Report prepared on: March 10, 2003

Approval for release:

Susan Warner
OASQA Representative

Site contact(s): Mitch Cron (3HS22)
Marian Murphy

U.S. EPA REGION III OFFICE OF ANALYTICAL SERVICES AND QUALITY ASSURANCE

SITE NAME: **BALLY GW CONTAMINATION**

LAB REQUEST # **REQ03099**

SAMPLE DESCRIPTIONS

Sample #	Station	Description	Material	Type	End Collection Date	Time
03022601	FB-01	FB-01	Aqueous Blank	GRAB	02/25/2003	09:00
03022602	MW3A	MW3A	Ground Water	GRAB	02/25/2003	09:15
03022603	MW3B	MW3B	Ground Water	GRAB	02/25/2003	09:20
03022604	MW3C	MW3C	Ground Water	GRAB	02/25/2003	09:25
03022605	MW3D	MW3D	Ground Water	GRAB	02/25/2003	09:30
03022606	MW3E	MW3E	Ground Water	GRAB	02/25/2003	09:35
03022607	TB-01	TB-01	Aqueous Blank	GRAB	02/25/2003	06:00

U.S. EPA REGION III OFFICE OF ANALYTICAL SERVICES AND QUALITY ASSURANCE

SITE NAME : **BALLY GW CONTAMINATION**

LAB REQUEST #: **REQ03099**

TESTS REQUESTED

ORGANICS 030226

	01	02	03	04	05	06	07
Solvent Stabilizers by Heated Purge & Trap GC/MS	X	X	X	X	X	X	X

(X = Test Requested)

U.S EPA REGION III OFFICE OF ANALYTICAL SERVICES AND QUALITY ASSURANCE

SITE NAME: **BALLY GW CONTAMINATION**

LAB REQUEST #: **REQ03099**

QUALIFIER CODE AND GLOSSARY DEFINITIONS

QUALIFIER CODES:

<	Sample value is below the quantitation limit. Quantitation limit reported.
</=	Reported value is estimated. Sample was analyzed in duplicate, one value is equal to or above the quantitation limit and one below. Average of quantitation limit and detected value reported.
>	Sample value is above the quantitation range.
A	Quality control value is outside acceptance limits.
B	Not detected substantially above (10 times) the level reported in the laboratory or field blanks (includes field, trip, rinsate, and equipment blanks).
C	See report narrative for analyst's observations concerning this result.
D	Sample and duplicate values are below the quantitation limit. Quantitation limit reported.
E	Value exceeds a theoretically greater value (e.g. dissolved > total, orthophosphate > total phosphorus). However, the difference is within the expected precision of the analytical techniques and is not statistically significant.
I	An interference exists which masks true response. See report narrative for explanation.
J	Analyte present. Reported value is estimated; concentration is outside the range for accurate quantitation.
K	Analyte present. Reported value may be biased high. Actual value is expected to be lower.
L	Analyte present. Reported value may be biased low. Actual value is expected to be higher.
N	Presumptive evidence indicates the presence of the compound. Special methods and/or method modifications may be needed to confirm its presence or absence in future sampling efforts.
NA	Analysis was not requested.
Q	No analytical results. See report for explanation.
R	Unreliable results. Analyte may or may not be present in the sample. Supporting data is necessary to confirm results.
T	Tentatively Identified Compound. Identified as a result of a library search using the EPA/NIH Mass Spectral Library. Authentic standards were not available to properly identify and quantitate the compound. The reported concentration is an estimate.
TD	Spike recovery too dilute for accurate quantitation.
UJ	Not detected. Quantitation limit is estimated.
UL	Not detected. Quantitation limit is probably higher.

GLOSSARY:

()	Numbers in parentheses are analytical spike recoveries (e.g. post-digestion spikes).
[]	Numbers in brackets are matrix spike recoveries (e.g. pre-digestion spikes).
MS/MSD	Matrix spike/matrix spike duplicate; a known increment of target analyte made to a sample before preparation or analyses.
MSA	Method of Standard Additions.
RPD	Relative Percent Difference; the results for duplicate analyses are presented as the mean and the relative percent difference.

$$RPD = \frac{|Replicate1 - Replicate2|}{(Replicate1 + Replicate2)/2} \times 100$$

.S. FPA REGION III OFFICE OF ANALYTICAL SERVICES AND QUALITY ASSURANCE

ITE NAME: **BALLY GW CONTAMINATION**

AB REQUEST #: **REQ03099**

ORGANIC ANALYTICAL SAMPLE RESULTS

Sample Number:	03022602	03022603	03022604	03022605	03022606
Station ID:	MW3A	MW3B	MW3C	MW3D	MW3E
	SAMPLE	SAMPLE	SAMPLE	SAMPLE	SAMPLE
olvent Stabilizers by Heated Purge & rap GC/MS					
1,4-Dioxane	49.3 ug/L	52.2 ug/L	38.7 ug/L	50.5 ug/L	50.6 ug/L

U.S. EPA REGION III OFFICE OF ANALYTICAL SERVICES AND QUALITY ASSURANCE

SITE NAME: BALLY GW CONTAMINATION

LAB REQUEST #: REQ03099

ORGANIC QUALITY CONTROL (SURROGATE RECOVERIES)

Matrix: WATER

	SAMPLE NUMBER:	03022601	03022602	03022603	03022604	03022605	03022606	03022607
	STATION ID:	FB-01	MW3A	MW3B	MW3C	MW3D	MW3E	TB-01
SURROGATES	LIMITS	FIELD BLANK	SAMPLE	SAMPLE	SAMPLE	SAMPLE	SAMPLE	TRIP BLANK
Solvent Stabilizers by Heated Purge & Trap	Range	% REC	% REC	% REC	% REC	% REC	% REC	% REC
d8-Toluene	(80-120)	103	101	98	98	101	98	100

.S EPA REGION III OFFICE OF ANALYTICAL SERVICES AND QUALITY ASSURANCE

:TE NAME: BALLY GW CONTAMINATION

\B REQUEST # REQ03099

ORGANIC QUALITY CONTROL (MATRIX SPIKE RECOVERIES)

atrix: WATER

SAMPLE NUMBER: 03022605

STATION ID: MW3D

ALYTES	Spike Recovery MS	MSD	Limits	Recovery RPD RPD	Limits
olvent Stabilizers by Heated Purge & Trap GC/MS	% REC	% REC	Range	RPD	Limit
.4-Dioxane	67 A	81	(80-120)	18 A	15

U.S. EPA REGION III OFFICE OF ANALYTICAL SERVICES AND QUALITY ASSURANCE

SITE NAME: **BALLY GW CONTAMINATION**

LAB REQUEST #: **REQ03099**

ORGANIC LABORATORY REAGENT BLANK RESULTS

Solvent Stabilizers by Heated Purge & Trap GC/MS

Date Prepared: FEB-26-2003

SURROGATES

d8-Toluene	99	% REC

Date Prepared: FEB-27-2003

SURROGATES

d8-Toluene	102	% REC

AR300090

1,4-Dioxane Analysis by GC/MS

Analyst:

Sue Warner
Chemist

Method:

Samples from BALLY GW CONTAMINATION (REQ03099) were analyzed for the presence of 1,4-dioxane amenable to heated purge and trap and identifiable by mass spectrometry. The samples were collected on February 25, 2003 and analyzed on February 26 and 27, 2003, using a consolidated method derived from EPA methods SDWA 524.2, NPDES 624, RCRA 8260 and the Superfund CLP Statement of Work and employing SOP R3-QA210.2. The following modifications were made to perform 1,4-dioxane analysis: heated purge with stirring, selective ion monitoring (SIM) and adding sodium chloride to the purge vial before purging.

Only detected results are reported. There was no 1,4-dioxane detected in samples 030226-01 and 030226-07. The nominal quantitation limit (NQL) for 1,4-dioxane was 5 ug/L.

The matrix spike recovery and RPD outside limits have been qualified with an "A".

U.S. EPA REGION III OFFICE OF ANALYTICAL SERVICES AND QUALITY ASSURANCE

SITE NAME: BALLY GW CONTAMINATION

LAB REQUEST #: REQ03099

SUPPLEMENTAL SAMPLE INFORMATION

Solvent Stabilizers by Heated Purge & Trap GC/MS

SAMPLE #	SAMPLE NQL FACTOR
03022601	1
03022602	1
03022603	1
03022604	1
03022605	1
03022606	1
03022607	1

NQL Factor is an overall correction factor applied to the method's Nominal Quantitation Limit to correct for analytical adjustments made during the analysis.

USEPA Contract Laboratory Program
Organic Traffic Report & Chain of Custody Record

Case No:	
DAS No:	R31553
SDG No:	

L

Date Shipped:	2/25/2003
Carrier Name:	FedEx
Airbill:	838828027257
Shipped to:	USEPA Region 3 Fort Meade 701 Mapes Road Fort Meade MD 20755 (410) 305-2667

Chain of Custody Record

Sampler Signature: Jeanne Thompson

Relinquished By	(Date / Time)	Received By	(Date / Time)
1 Jeanne Thompson	2/25/03 1300	Cathy Wells	2-26-03 12:00
2			
3			
4			

For Lab Use Only

Lab Contract No:
Unit Price:
Transfer To:
Lab Contract No:
Unit Price:

ORGANIC SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE	STATION LOCATION	SAMPLE COLLECT DATE/TIME	INORGANIC SAMPLE No.	FOR LAB USE ONLY Sample Condition On Receipt
C00M9	Drinking Water/ Jeanne Thompson	L/G	1,4-Dioxan (14)	350 (Ice Only), 351 (Ice Only), 352 (Ice Only) (3)	FB-01	S: 2/25/2003 9:00	030226-01	
C00N0	Drinking Water/ Jeanne Thompson	L/G	1,4-Dioxan (14)	353 (Ice Only), 354 (Ice Only), 355 (Ice Only) (3)	MW3A	S: 2/25/2003 9:15	-02	
C00N1	Drinking Water/ Jeanne Thompson	L/G	1,4-Dioxan (14)	356 (Ice Only), 357 (Ice Only), 358 (Ice Only) (3)	MW3B	S: 2/25/2003 9:20	-03	
C00N2	Drinking Water/ Jeanne Thompson	L/G	1,4-Dioxan (14)	359 (Ice Only), 360 (Ice Only), 361 (Ice Only) (3)	MW3C	S: 2/25/2003 9:25	-04	
C00N3	Drinking Water/ Jeanne Thompson	L/G	1,4-Dioxan (14)	362 (Ice Only), 363 (Ice Only), 364 (Ice Only), 365 (Ice Only), 366 (Ice Only), 367 (Ice Only), 368 (Ice Only), 369 (Ice Only), 370 (Ice Only) (9)	MW3D	S: 2/25/2003 9:30	-05	
C00N4	Drinking Water/ Jeanne Thompson	L/G	1,4-Dioxan (14)	371 (Ice Only), 372 (Ice Only), 373 (Ice Only) (3)	MW3E	S: 2/25/2003 9:35	-06	
C00N5	Drinking Water/ Jeanne Thompson	L/G	1,4-Dioxan (14)	374 (Ice Only), 375 (Ice Only), 376 (Ice Only) (3)	TB-01	S: 2/25/2003 6:00	-01	

ARB00093

Shipment for Case Complete?Y	Sample(s) to be used for laboratory QC: C00N3	Additional Sampler Signature(s):	Cooler Temperature Upon Receipt:	Chain of Custody Seal Number:
Analysis Key:	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G		Custody Seal Intact?__ Shipment Iced?__

1,4-Dioxan = 1,4-Dioxane

TR Number: 3-190177755-022403-0001

LABORATORY COPY

PR provides preliminary results. Requests for preliminary results will increase analytical costs.
Send Copy to: Contract Laboratory Analytical Services Support, 2000 Edmund Halley Dr., Reston, VA. 20191-3436 Phone 703/264-9348 Fax 703/264-9222

Precautionary Measures Against Hidden Hazards in Laboratory Samples

Notice to Laboratory Personnel

Background

Under the authority of Section 104 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund) of 1980, Section 311 of the Clean Water Act, and Subtitle I of the Resource Conservation and Recovery Act (RCRA), EPA has been delegated the responsibility to undertake response actions with respect to the release or potential release of oil, petroleum or hazardous substances that pose a substantial threat to human health or welfare, or the environment. In addition, EPA provides technical assistance to help mitigate endangerment of the public health, welfare or environment during other emergencies and natural disasters.

EPA's successful implementation of these emergency response action responsibilities requires that technical support capabilities be provided in the form of contracted Superfund Technical Assessment and Response Team (START) teams for each EPA Region. The Tetra Tech EM Inc. START Region 3 Eastern Area Contract 68-S3-0002 provides support to EPA Region III.

Hazard Communication

The samples which accompany this notice have been shipped to your laboratory for analysis in accordance with applicable DOT or IATA Regulations and were collected by the TETRA TECH EM INC. START team and were tentatively designated by the field response team as either environmental or hazardous material samples.

In general, *Environmental Samples* are collected from streams, farm ponds, small lakes, wells and off-site soils that are not reasonably expected to be contaminated with hazardous materials. Samples of on-site soils or water and materials collected from drums, bulk storage tanks, obviously contaminated ponds, impoundments, lagoons, pools and leachates from hazardous waste sites are considered *Hazardous Samples*. Samples which are obtained from a known radioactive material contamination site or which demonstrate beta or gamma activity greater than three times average background as scanned with a Geiger-Mueller radiation survey meter are considered *Radioactive Samples*.

The samples which accompany this notice have been tentatively classified by the field response team as:

X Environmental _____ Hazardous _____ Comb. (Envir. & Haz.) _____ Radioactive

The field team which collected the sample used the following Level(s) of personal protection as designated by EPA and OSHA conventions to provided protection against possible radiological or chemical exposure:

_____ Level A _____ Level B _____ Level C X Level D

This information is intended for use as a guide for the safe handling of these laboratory samples in accordance with EPA and OSHA regulations. The sample classification(s) and Levels of personal protection used by the TERTA TECH EM INC. START team are not represented to be, nor are they adequate or applicable in all situations, nor are they intended to serve as substitutes for professional/personal judgement.

This form was prepared by: Jeanne Thompson

Analytical Services TDD No. or Case No.: R31553 Date: 2/25/03

Tetra Tech EM Inc. Office Boothwyn, PA Phone: 610-485-6410 Fax: 610-485-8587

Laboratory Name: USEPA Region 3 Fort Meade

7

100

Fed Express **USA Airbill** FedEx Tracking Number 8388 2802 7257

Recipient's Copy

1 From This portion can be removed for Recipient

Date 9/25/03 FedEx Tracking Number 838828027257

Sender's Name Jeanne Thompson Phone 610 [illegible]

Company TETRA TECH EM INC/ORG ACCT

Address 709 CHELSEA PKWY

Dept./Floor/Suite/Room

City BOOTHWYN State PA ZIP [illegible]

2 Your Internal Billing Reference 6900336-03-003

3 To

Recipient's Name Phil Scarlet Phone [illegible]

Company USEPA Region 3 Fort Meade

Address 701 Mapes Road

To "HOLD" at FedEx location, print FedEx address. We cannot deliver to P.O. boxes or P.O. ZIP codes.

Address

Dept./Floor/Suite/Room

City Fort Meade State MD ZIP [illegible]

8388 2802 7257

4a Express Package Service — Packages up to 150 lbs.

Delivery commitment may be later in some areas.

- [x] FedEx Priority Overnight — Next business morning
- [ ] FedEx Standard Overnight — Next business afternoon
- [ ] FedEx First Overnight — Earliest next business morning delivery to select locations
- [ ] FedEx 2Day — Second business day
- [ ] FedEx Express Saver — Third business day

FedEx Envelope rate not available. Minimum charge: One-pound rate

4b Express Freight Service — Packages over 150 lbs.

Delivery commitment may be later in some areas.

- [ ] FedEx 1Day Freight* — Next business day
- [ ] FedEx 2Day Freight — Second business day
- [ ] FedEx 3Day Freight — Third business day

*Call for Confirmation:

5 Packaging — *Declared value limit $500

- [ ] FedEx Envelope*
- [ ] FedEx Pak* — Includes FedEx Small Pak, FedEx Large Pak, and FedEx Sturdy Pak
- [x] Other

6 Special Handling

- [ ] SATURDAY Delivery — Available only for FedEx Priority Overnight and FedEx 2Day to select ZIP codes
- [ ] HOLD Weekday at FedEx Location — Not available for FedEx First Overnight
- [ ] HOLD Saturday at FedEx Location — Available only for FedEx Priority Overnight and FedEx 2Day to select locations

Does this shipment contain dangerous goods?

- [x] No
- [ ] Yes — As per attached Shipper's Declaration
- [ ] Yes — Shipper's Declaration not required
- [ ] Dry Ice — Dry Ice, 9, UN 1845 ____ x ____ kg
- [ ] Cargo Aircraft Only

Dangerous Goods (including Dry Ice) cannot be shipped in FedEx packaging.

7 Payment Bill to:

- [x] Sender — Acct. No. in Section 1 will be billed
- [ ] Recipient
- [ ] Third Party
- [ ] Credit Card
- [ ] Cash/Check

[redacted]

Total Packages: 1 Total Weight: 20 [redacted] Total Charges

Credit Card Auth.

†Our liability is limited to $100 unless you declare a higher value. See the FedEx Service Guide for details.

8 Release Signature — Sign to authorize delivery without obtaining signature.

By signing you authorize us to deliver this shipment without obtaining a signature and agree to indemnify and hold us harmless from any resulting claims.

Questions? Visit our Web site at fedex.com

or call 1-800-GO-FEDEX (1-800-463-3339).

[illegible] Rev. Date 4/97 • Part #15165-[illegible] 2002 FedEx • PRINTED IN U.S.A.

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AR300095